HYDRODYNAMIC MODELING FOR THE WATER MANAGEMENT OF THE GUÁJARO RESERVOIR, COLOMBIA

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Abstract

The reservoir of Guájaro, in northern Colombia, is a water system supplied by an artificial channel (the Canal del Dique) through a gate device. During the last decades, it has presented problems of excessive use, for which it is necessary to regulate the hydraulic structures that supply this body of water, since they play an important role in the management of the levels, which, in turn, have an impact in the water supply. As a management measure for the sustainability of the reservoir, this work has been developed, in which the implementation of a two-dimensional hydrodynamic model (EFDC Explorer model) is presented, as well as its calibration by comparing time series of the water levels of the reservoir with the results of the measured speeds and those calculated by the model, during 2 different climatic periods (dry and rainy), to contribute with a computational tool to the sustainable exploitation of the Hidrosistema Canal del Dique-El Guájaro Reservoir. The comparisons made showed a good behavior and a good fit between the measured values and those simulated by the model, based on the quantitative reliability results (Nash-Sutcliffe). It is considered that the obtained results are quite satisfactory and allow to estimate conditions for the restoration, the aprovechamiento and the sustainable use of this hydric system

Keyword

EFDC explorer, Hydrodynamic modeling, Water resource management